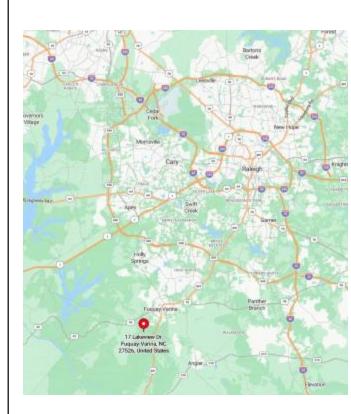
#### SR.# PHOTOVOLTAIC ROOF MOUNT SYSTEM **PROJECT INFORMATION PV MODULES** 1 25 x Canadian Solar CS6.1-54TM-455H **CODE AND STANDARDS INVERTER + BATTERY** 2 01 X POWERWALL 3 THE INSTALLATION OF SOLAR ARRAYS AND PHOTOVOLTAIC POWER SYSTEMS SHALL COMPLY 3 **ROOF TYPE ASPHALT SHINGLES** WITH THE FOLLOWING CODES: 2020 NATIONAL ELECTRICAL CODE 4 RACKING PSR-B84 RAILS (BLACK) 2018 NORTH CAROLINA RESIDENTIAL CODE 2018 NORTH CAROLINA BUILDING CODE 5 **MOUNTING TYPE** INSTAFLASH2 (BLACK) ALL OTHER ORDINANCE ADOPTED BY THE LOCAL GOVERNING AGENCIES DC SIZE 6 11.375 KW **SITE NOTES / OSHA REGULATION AC SIZE** 11.5 KVA 7 1. A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS. THE SOLAR PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR SR.# **PROJECT INFORMATION** BUILDING ROOF VENTS. ROOFTOP MOUNTED PHOTOVOLTAIC PANELS AND MODULES SHALL BE TESTED, LISTED AND PV1 1 **DRAWING INDEX** IDENTIFIED BY RECOGNIZED ELECTRICAL TESTING LABORATORY. MODULES AND SUPPORT STRUCTURES SHALL BE GROUNDED 2 PV2 SITE LAYOUT SOLAR INVERTER SHALL BE LISTED TO UL1741 PV3 3 STRING MAPPING ALL CONDUCTORS SHALL BE COPPER AND SHOULD BE 75 AND 90 DEG RATED REMOVAL OF AN INTERACTIVE INVERTER OR OTHER EQUIPMENT SHALL NOT DISCONNECT PV4 **ELECTRICAL ONE LINE DIAGRAM** 4 THE BONDING CONNECTION BETWEEN THE GROUNDING ELECTRODE CONDUCTOR, THE PHOTOVOLTAIC SOURCE AND OUTPUT CIRCUIT GROUNDED CONDUCTORS. PV5 5 DETAILED ELECTRICAL WIRING SCHEMATIC LIVE PARTS OF PV SOURCE CIRCUITS AND PV OUTPUT CIRCUITS OVER 150V TO GROUND SHALL NOT BE ACCESSIBLE TO OTHER THAN QUALIFIED PERSONS WHILE ENERGIZED. PV6 6 **PV LABELS** ALL PV MODULES AND ASSOCIATED EQUIPMENT AND WIRING SHALL BE PROTECTED FROM 7 PV7 BILL OF MATERIALS



PV8

8



ATTACHMENT DETAILS

ADVANCING ENERGY INDEPENDENCE
5112 Departure Drive,
Raleigh NC 27616
O: 919.948.6474
E: info@8msolar.com
Customer Information:
Virginia Blanton
17 Lakeview Dr
Fuquay-Varina, NC 27526
Customor Cianoturo
Customer Signature:
Sheet Name:
Drawing Index
JOB NUMBER:
25-275-PB

8MSOLAR



4	Date:	Revision:
	07/24/2025	А
	Sheet Size:	Sheet Number:
	ANSI C 17" X 22"	PV1
5		

**DESIGN CRITERIA** WIND SPEED: 120 MPH **GROUND SNOW LOAD: 15 PSF** WIND EXPOSURE FACTOR: B

CONNECTIONS.

VOC UNLESS NOT AVAILABLE.

PHYSICAL DAMAGE.

**SOLAR CONTRACTOR** 

**DUKE ENERGY** 

1. MODULE CERTIFICATIONS INCLUDE UL1703, IEC61646, IEC61370.

DOCUMENTATION AND APPROVED BY THE AHJ.

2. IF APPLICABLE, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE MARKED

IN PLACE OF STANDARD GROUNDING LUGS AS SHOWN IN MANUFACTURER

GROUNDING LUG HOLES PER THE MANUFACTURERS INSTALLATION REQUIREMENTS.

ALL MICROINVERTERS, PHOTOVOLTAIC MODULES, AC COMBINERS, DC-AC CONVERTERS

TERMINALS AND LUGS WILL BE TIGHTENED TO MANUFACTURER TORQUE SPECIFICATIONS

AND SOURCE CIRCUIT COMBINERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER

(WHEN PROVIDED) IN ACCORDANCE WITH NEC CODE 110.14(D) ON ALL ELECTRICAL

7. MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR

SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER NEC690.4(B).

ALL SIGNAGE TO BE INSTALLED IN ACCORDANCE WITH LOCAL BUILDING CODE.

AS INDICATED BY DESIGN, OTHER NRTL LISTED MODULE GROUNDING DEVICES MAY BE USED

PERMIT ISSUER (AHJ): HARNETT COUNTY

SCOPE OF WORK INSTALLATION OF UTILITY INTERACTIVE PHOTOVOLTAIC SOLAR SYSTEM.

**VICINITY MAP** 

TOP VIEW OF THE BUILDING

CERTIFIED PV Installation

**UTILITY COMPANY:** 

	MODULE DIMENSIONS			
ROOF	PITCH	AZIMUTH	NO. OF MODULES	44.6 in.
А	15°	199°	14	
В	11°	19°	11	70.9 in.
				<b>—</b>
				·

No vent will be covered by PV modules during the

installation.

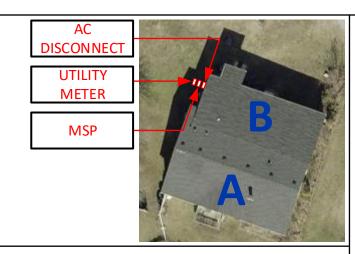
Vent

PV System Dead Load  (Panel + Racking weight) / PV System Area  (No. of panels x Weight of panel(lbs.) +Length of racking(ft.) x 1.15 lb.ft) /  (No. of panels x Height x Width) = Total psf						
ROOF	А	В				
DEAD LOAD	2 90	2 67				

2.67

2.90

(PSF)





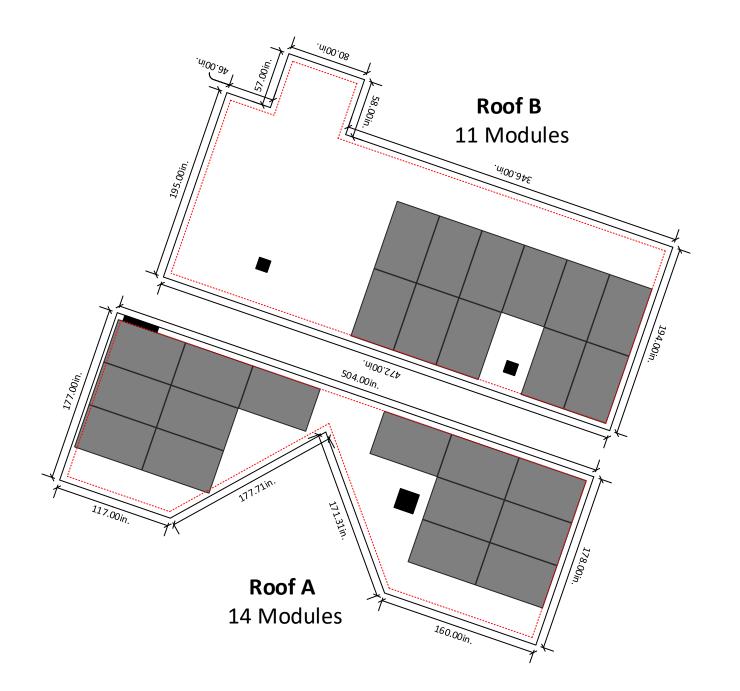
5112 Departure Drive, Raleigh NC 27616 O: 919.948.6474 E: info@8msolar.com

**SYSTEM DETAILS** 

NUMBER OF PANELS: 25

PANELS MODEL: CANADIAN SOLAR CS6.1-54TM-455H

DC SIZE: 11.375 KW AC SIZE: 11.5 KVA



**Customer Information:** 

Virginia Blanton

17 Lakeview Dr Fuquay-Varina, NC 27526

**Customer Signature:** 

**Sheet Name:** 

Site Layout

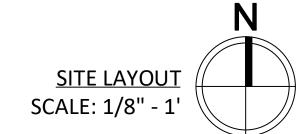
**JOB NUMBER:** 

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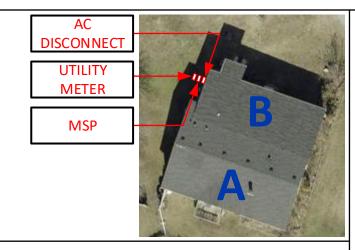
Date:	Revision:
07/24/2025	А
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ANSI C 17" X 22"	PV2



6in setback from sides of the roof



ROOF DESCRIPTION			MODUI	LE DIMENSIONS			STRING	LAYOUT				
ROOF	PITCH	AZIMUTH	NO. OF MODULES	1—		∤ 44.6 in. ∤—			TESLA POV	VERWALL3		
А	15°	199°	14			Strings #	No. of Modules	Color	Strings #	No. of Modules	Color	
В	11°	19°	11	70.9 in		String 1	11					
				7		String 2	07					
						String 3	07					
		•								•		



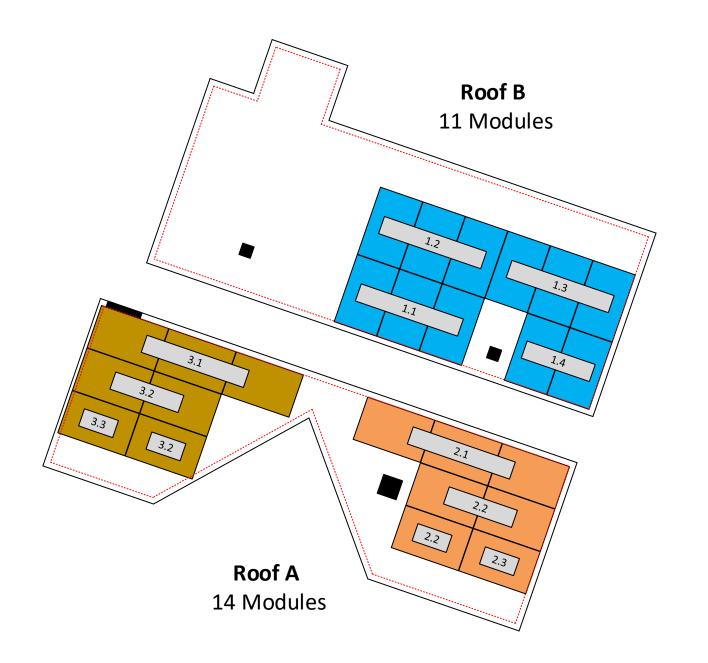


**SYSTEM DETAILS** 

NUMBER OF PANELS: 25

PANELS MODEL: CANADIAN SOLAR CS6.1-54TM-455H

DC SIZE : 11.375 KW AC SIZE : 11.5 KVA



# **Customer Information:**

# Virginia Blanton

17 Lakeview Dr Fuquay-Varina, NC 27526

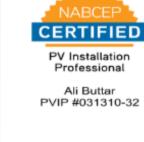
# **Sheet Name:**

String Mapping

# **JOB NUMBER:**

25-275-PB

Date:	Revision:
07/24/2025	А
<b>Sheet Size:</b>	Sheet Number:
ANSI C 17" X 22"	PV3



6in setback from sides of the roof

Tesla MCI (Mid Circuit Interrupter)

STRING MAPPING
SCALE: 1/8" - 1'

STRING CALCULATION							
String #	No of Modules	Estimated Power	Imax	Impp	Voc	Vmpp	
1	11	5,005 W	21.40 Adc	13.72 Adc	430.1 Vdc	550 Vdc	
2,3	07	3,185 W	21.40 Adc	13.72 Adc	273.7 Vdc	550 Vdc	

NEC Code (2020) and UL Standard Refrences						
Rapid Shut Down	NEC 690.12 (A-D), UL1741 Grounding NEC Article 250.30					
Disconnecting Means	NEC 690.13	Conduit Fill	NEC Table C.9, 310.15(B)(3)(a)			
Feeder Sizing	NEC Table 310, 15(B)(16, 17)	Interconnection	NEC 705.12			
Over current Protection	NEC 690.9					

Service Side Work: Power Drop Required

FROM UTILITY

(8)

Trench Path →

Trench Path →

MAIN LOAD PANEL B.B RATING: 200A M.B RATING: 200A

1" LFMC

1" LFNC

2" PVC

2" PVC

1/2" LFNC

#6 Green Cu

#6 Green Cu

#6 Green Cu

60

60

200

200

Utility Meter

Backup Gateway 3

(7)

200A/2P

200A/2P 

60A/2P

5112 Departure Drive, Raleigh NC 27616 O: 919.948.6474

E: info@8msolar.com

#### **Customer Information:**

#### **Virginia Blanton**

17 Lakeview Dr Fuquay-Varina, NC 27526

# **Customer Signature:**

#### **Sheet Name:**

Electrical One Line Diagram

# **JOB NUMBER:**

Date:

25-275-PB

**Revision:** 

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			<b>Sheet Size:</b>	Sheet Number:
Conduit Size	Ground Wire	Amperage	ANSI C	
	#10 Bare Cu	21.40	17" X 22"	PV4
3/4" EMT	#10 Green Cu	21.40		
1" EMT	#6 Green Cu	60		
T EIVII				
	"6 6	60		

CERTIFIED PV Installation Professional Ali Buttar

25 X CANADIAN SOLAR CS6.1-54TM-455H 450W TESLA MCI-2 HIGH CURRENT (Mid Circuit Interrupter)

RAPID SHUTDOWN EQUIPPED

• System Size: 11,375W DC

• (01) Tesla Powerwall 3

• 11.5 kVA AC output max

• Battery Total Energy: 13.5 KWh

• (10) Tesla MCI-2 High Current

• (25) Canadian Solar CS6.1-54TM-455H

• Inverter Output: 48A max @ 240 VAC (each)

Tesla Powerwall 3 System Shutdown Switch (E-Stop) **60A BREAKER CONNECTION** INSIDE THE BACKUP GATEWAY 3 Sola Deck **60A NON-FUSIBLE** CrawlSpace **AC DISCONNECT** (Battery Section) String 3 200A/2P SUB LOAD PANEL B.B RATING: 200A M.B RATING: 200A

- Grounding will be done via Pegasus grounding lugs and midclamps to ensure the rail and panels are continuously
- Rapid Shutdown is included in the Mid Circuit Interrupter, refer to Mid Circuit Interrupter and Inverter attached
- accessible to utility linesmen, and properly labeled per NEC requirements. It will be located on the exterior wall next to the utility meter.
- Stretch tape and apply half-lapped to form void-free joint. Degree of stretch is not critical and may vary in different

Sr.No

1

2

3

4

5

6

7

8

9

#Wire

2 x #10 PV

6 x #10 THHN Cu

3 x #6 THHN Cu

2-conductor shielded (1 twisted pair) 16 AWG

3 x #6 THHN Cu

2-conductor shielded (1 twisted pair) 16 AWG

3 x #6 THHN Cu

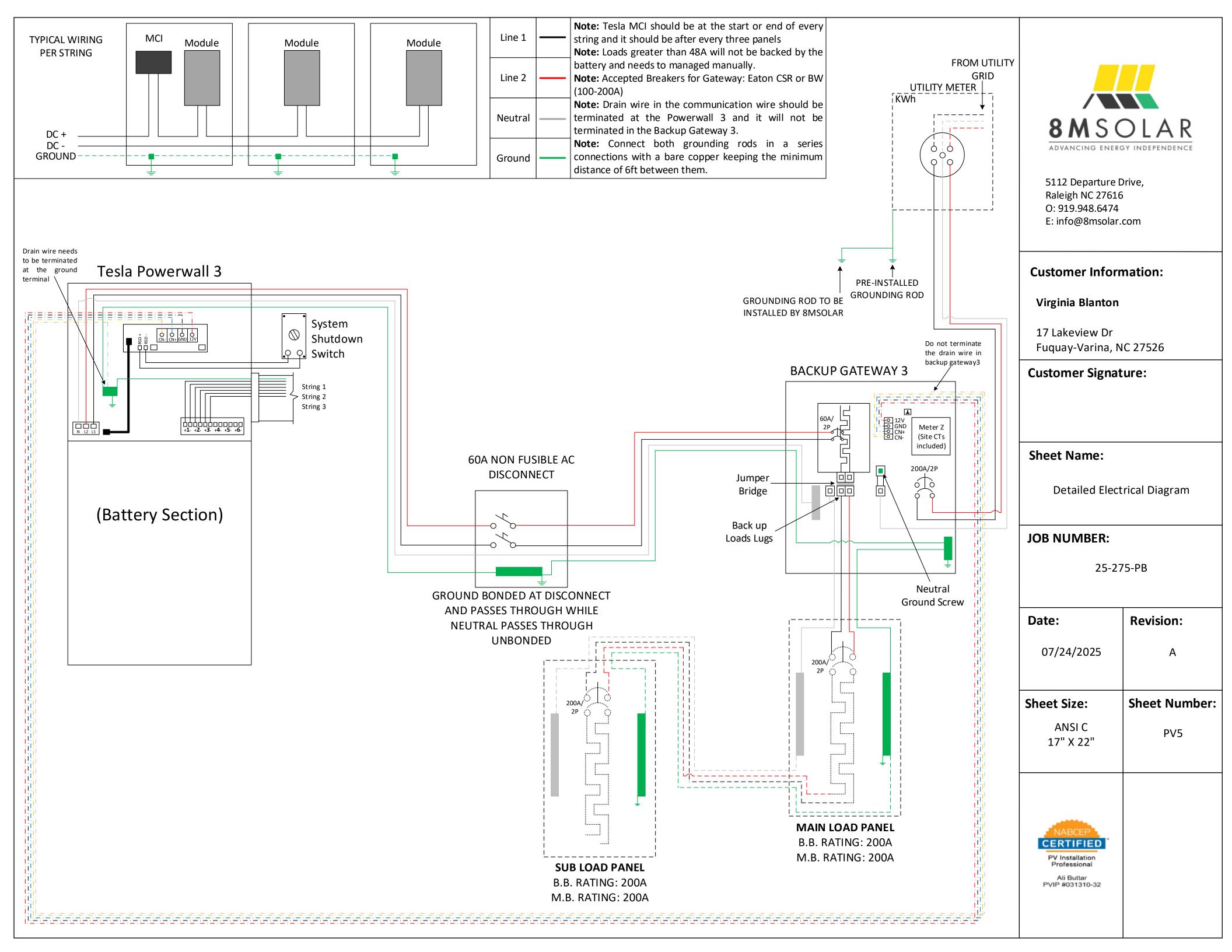
3 x #3/0 THHN Cu

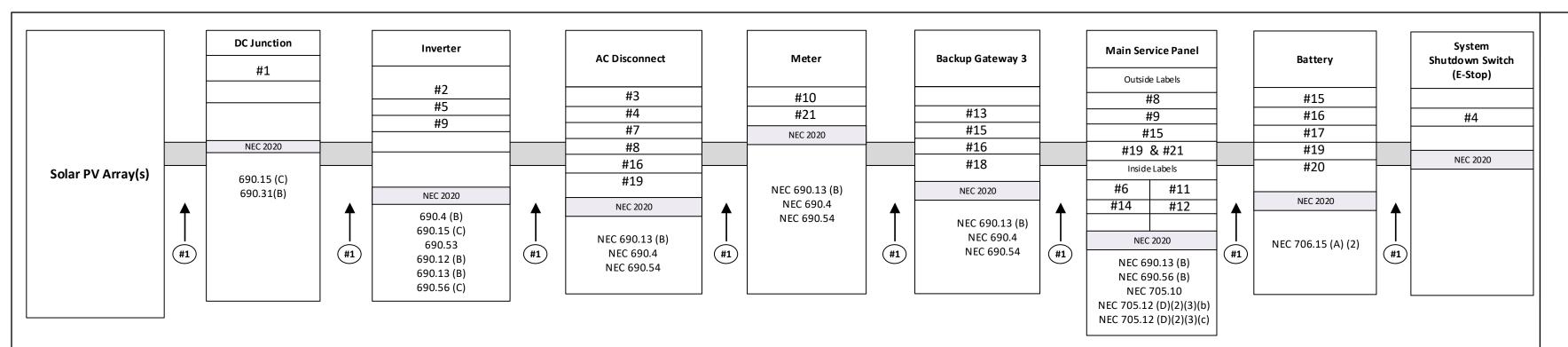
3 x #3/0 THHN Cu

4-conductor shielded (2 twisted pair) 16 AWG

2-conductor shielded (1 twisted pair) 16 AWG

- The load center/disconnect will be visible, lockable,
- Prepare cable in usual manner.
- sections of joint to accomplish void-free application.
- Protect the joint with two half-lapped layers of any scotch vinyl plastic electrical tape.







# LABELING AND WARNING SIGNS: NEC 2020

#### A. PURPOSE

PROVIDE EMERGENCY RESPONDERS WITH APPROPRIATE WARNING AND GUIDANCE WITH RESPECT TO ISOLATING THE SOLAR ELECTRIC SYSTEM. THIS CAN FACILITATE IDENTIFYING ENERGIZED ELECTRICAL LINES THAT CONNECT THE SOLAR PANELS TO THE INVERTER, AS SHOULD NOT BE CUT WHEN VENTING FOR SMOKE REMOVAL.

#### B. MAIN SERVICE DISCONNECT:

- 1. RESIDENTIAL BUILDINGS- THE MARKING MAY BE PLACED WITHIN THE MAIN SERVICE DISCONNECT. THE MARKING SHALL BE PLACED ON THE OUTSIDE COVER IF THE MAIN SERVICE DISCONNECT IS OPERABLE WITH THE SERVICE PANEL CLOSED.
- 2. COMMERCIAL BUILDINGS- THE MARKINGS SHALL BE PLACED ADJACENT TO THE MAIN SERVICE DISCONNECTCLEARLY VISIBLE FROM THE LOCATION WHERE THE LEVER IS OPERATED
- 3. MARKINGS, VERBIAGE, FORMAT AND TYPE OF MATERIAL
  - a. VERBIAGE: CAUTION; SOLAR ELECTRIC SYSTEM CONNECTED b. FORMAT:
    - (1) WHITE LETTERING ON A RED BACKGROUND
    - (2) MINIMUM 3/8 INCH LETTER HEIGHT
    - (3) ALL LETTERS SHALL BE CAPITALIZED
    - (4) ARIAL OR SIMILAR FONT, NON-BOLD

#### c. MATERIAL:

- (1) REFLECTIVE, WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT (USE UL-969) AS STANDARD FOR WEATHER RATING): DURABLE ADHESIVE MATERIALS MEET THIS REQUIREMENT.
- C. MARKING REQUIREMENTS ON DC CONDUIT, RACEWAYS, ENCLOSURES, CABLE ASSEMBLIES, DC COMBINERS AND JUNCTION BOXES;
  - 1. MARKING: PLACEMENT, VERBIAGE, FORMAT AND TYPE OF MATERIAL.
    - a. PLACEMENT: MARKINGS SHALL BE PLACED EVERY 10 (TEN)
      FEET ON ALL INTERIOR AND EXTERIOR DC CONDUITS, RACEWAYS,
      ENCLOSURES AND CABLE ASSEMBLIES, AT TURNS ABOVE AND/OR
      BELOW PENETRATIONS, ALL DC COMBINERS AND JUNCTION

#### BOXES.

- b. VERBIAGE: CAUTION SOLAR CIRCUIT
- c. THE FORMAT AND TYPE OF MATERIAL SHALL ADHERE TO SECTION B-3.B & C ABOVE
- D. INVERTERS ARE NOT REQUIRED TO HAVE CAUTION MARKINGS

# **#1** WARNING:PHOTOVOLTAIC POWER SOURCE

#2 PHOTOVOLTAIC

DC DISCONNECT

#3 PHOTOVOLTAIC

AC DISCONNECT

#4 RAPID SHUTDOWN
SWITCH FOR
SOLAR PV SYSTEM

MAXIMUM VOLTAGE

MAX. RATED CIRCUIT CURRENT

OF THE CHARGE CONTOLLER OR

DC-TO-DC CONVERTER (IF INSTALLED)

#6 PHOTOVOLTIVC POWER SOURCE
OPERATING AC VOLTAGE 240 V

MAXIMUN OPERATING AC OUTPUT CURRENT 48 A

AC DISCONNECT

PHOTOVOLTAIC SYSTEM
POWER SOURCE

RATED AC
OUTPUT CURRENT
NOMINAL OPERATING
AC VOLTAGE

240 VOLTS

#8

! WARNING

ELECTRIC SHOCK HAZARD

TERMINAL ON THE LINE AND LOAD

SIDES MAY BE ENERGIZED IN THE

OPEN POSITION



#10

! WARNING !

THREE POWER SOURCES

SOURCES: UTILITY GRID, BATTERY AND PV SOLAR ELECTRIC SYSTEM

#11
! WARNING

TURN OFF PHOTOVOLTAIC
AC DISCONNECT PRIOR TO

#12 ! WARNING

POWER SOURCE
OUTPUT CONNECTION
DO NOT RELOCATE THIS
OVERCURRENT DEVICE

**WORKING INSIDE PANEL** 

#13 WARNING

SOLAR ELECTRIC
CIRCUIT BREAKER
IS BACKFEED

#14

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE

SHOCK HAZARD IN THE

ARRAY

#15
SOLAR AC DISCONNECT
LOCATED AT NORTH-WEST SIDE
WALL OF THE HOUSE BESIDE
THE UTILITY METER

#16
SERIVCE DISCONNECT LOCATED
IN THE BACKUP GATEWAY 3
PANEL

#17 BATTERY

#18

MAIN BATTERY
SYSTEM DISCONNECT

#19
BATTERY DISCONNECT LOCATED
IN THE BACKUP GATEWAY 3
PANEL

#20 ENERGY STORAGE
SYSTEM DISCONNECT
NOMINAL ESS AC VOLTAGE 240V
NOMINAL ESS DC VOLTAGE 550V
AVAILABLE FAULT CURRENT
DERIVED FROM THE ESS
DATE CALCULATION PERFORMED 06/02/2025

#### **Customer Information:**

**Virginia Blanton** 

17 Lakeview Dr Fuquay-Varina, NC 27526

**Customer Signature:** 

**Sheet Name:** 

PV Labels

**JOB NUMBER:** 

25-275-PB

Date:

07/24/2025

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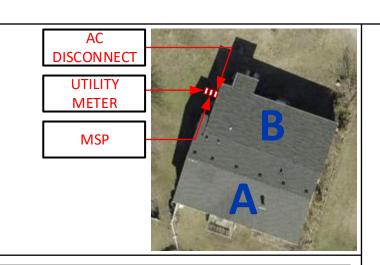
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ANSI C
17" X 22"

PV6



ROOF DESCRIPTION				MODULE DIMENSIONS	D II I I I I DOD DOA (DI ACK)	
ROOF	PITCH	AZIMUTH	NO. OF MODULES	44.6 in. ↓	Rails and Splices : PSR-B84 (BLACK)	Roof Attachment : Pegasus InstaFlash2
А	15°	199°	14	<u>.</u>	Rafter Spacing : 16 in	There is one layer of shingles
В	11°	19°	11	70.9 in	Harter Spacing 1 20 m	Roofing material is asphalt shingles
				7	Attachment Span: 5 ft. 4 in.	The roof is located in 120mph wind zone
					Attaciment Span. 5 ft. 4 m.	The roof is located in 120mph wind 20me





#### **Customer Information:**

#### **Virginia Blanton**

17 Lakeview Dr Fuquay-Varina, NC 27526

# **Customer Signature:**

#### **Sheet Name:**

Bill of Material

# **JOB NUMBER:**

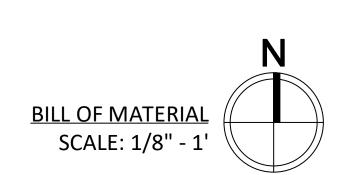
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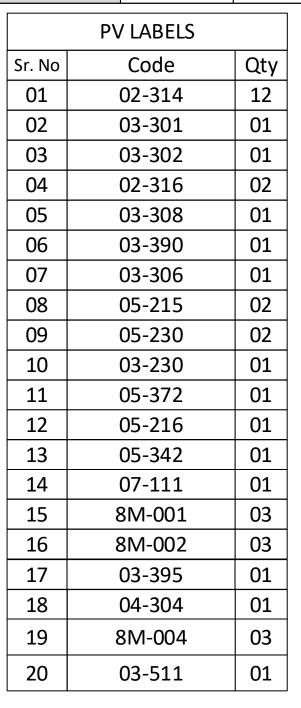
PV Installation Professional

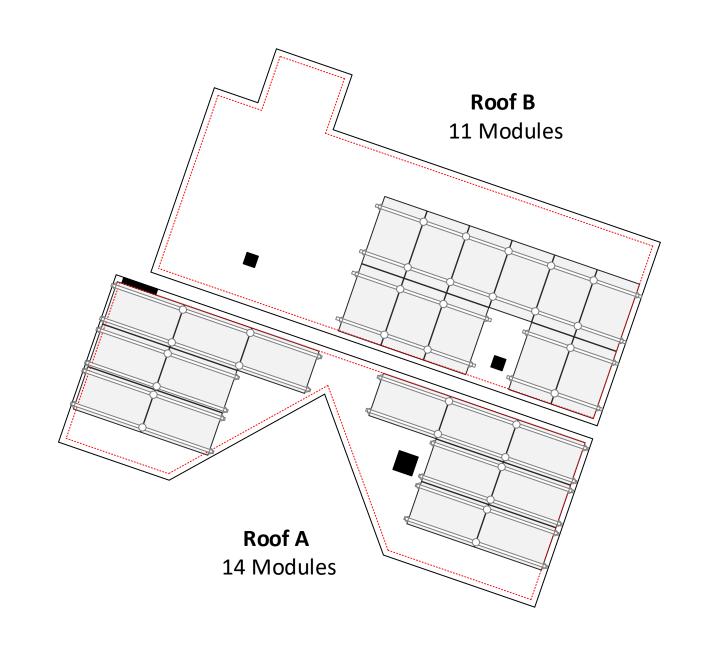
Ali Buttar PVIP #031310-32

25-275-PB

Date:	Revision:		
07/24/2025	А		
Sheet Size:	Sheet Number:		
ANSI C 17" X 22"	PV7		







#### **RAILS AND MOUNTING SYSTEM**

- 44 x PSR-B84: Pegasus Rail, Black, 84" (7 Feet)
- 26 x PSR-SPLS: Pegasus Bonded, Structural Splice
- 32 x PSR-MCB: Pegasus Multiclamp, Mid/End, 30 to 40 mm, Black
- 36 x PSR-HEC: Pegasus Hidden End Clamp
- 15 x PSR-LUG: Pegasus Grounding Lug
- 38 x PSR-WMC: Pegasus Wire Management Clip
- 05 x PSR-CBG: Pegasus Cable Grip
- 36 x PSR-CAP: Pegasus End Cap
- 68 x PIF2-BDT: Pegasus InstaFlash2 Deck or Rafter Attach with Dovetail T-Bolt
- 200 x PF-DRW85: Pegasus Fastener Deck-Rafter 85mm
- 50 x S6405: Heyco Wire Clips
- 02 x GEOC GC66100: SEALANT 2300 10.30Z CLEAR (20) GEOCEL 230 TRIPOLY CLEAR
- 15 x MULTI 32.0017P0001-UR: PV MC4 MALE (10) [1000]
- 15 x MULTI 32.0016P0001-UR: PV MC4 FEMALE (10) [1000]

#### **SOLAR MODULES**

• 25 x Canadian Solar CS6.1-54TM-455H

#### **INVERTER & SUPPORTING ITEMS**

- 01 x 1707000-00-J :Tesla Powerwall 3
- 10 x 1879359-15-B: Tesla MCI-2 High Current
- 01 x 1841000-01-C: Backup GateWay 3
- 01 x 1549184-00-X: 02" Conduit Hub Kit

#### WIRE

• 01 x WIRPV 2KVPV10STRBLK500: #10 PV WIRE BLK (Cu) 500ft

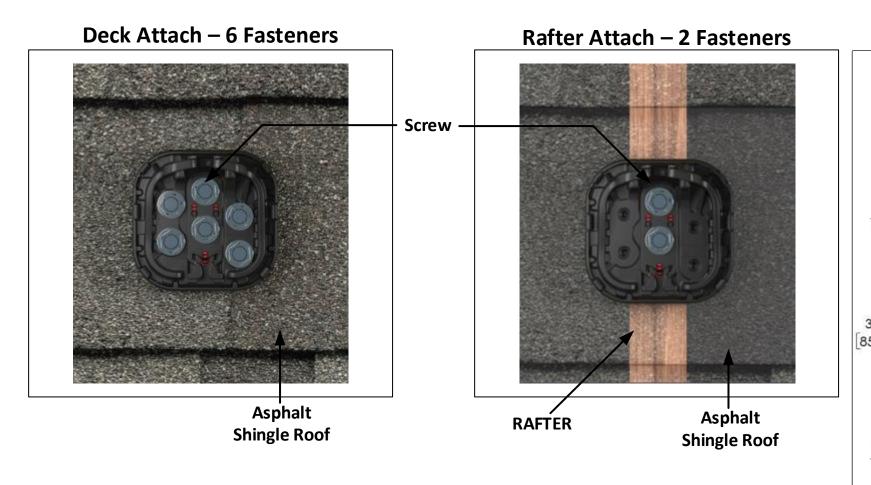
## **ELECTRICAL ITEMS**

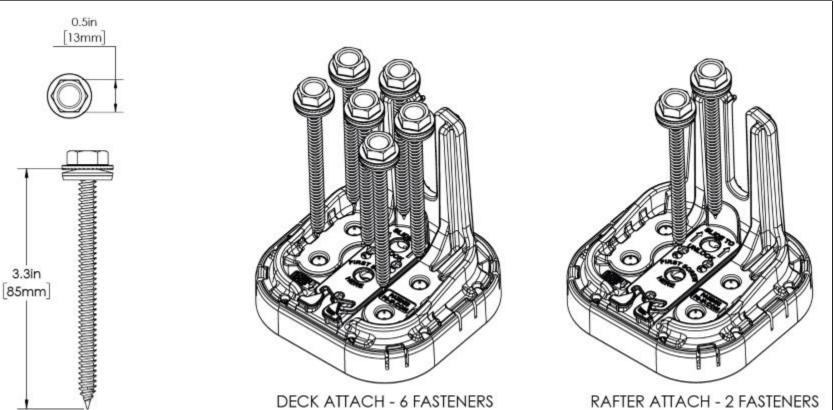
- 01 x BW2200: Gateway Main Breaker-Eaton BW2200
- 01 x BR260: Eaton BR 60/2 for Backup Gateway 3
- 01 x DG222URB: 250volt/60amp/2pole non fusible disconnect (NEMA 3R)
- 01 x EATON M22PVK01: 22.5MM PB EMG STOP W/ CONTACTOR
- 01 x Eaton M22I1PG: SFC MTG ENC Emergency Stop Enclosure
- 01 x EZSLR JB-1.2: SolaDeck

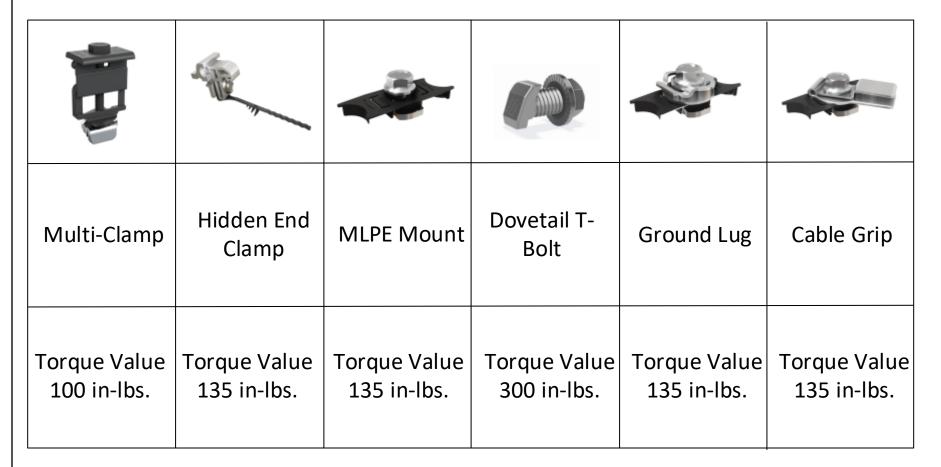
## **Roof Flashings**

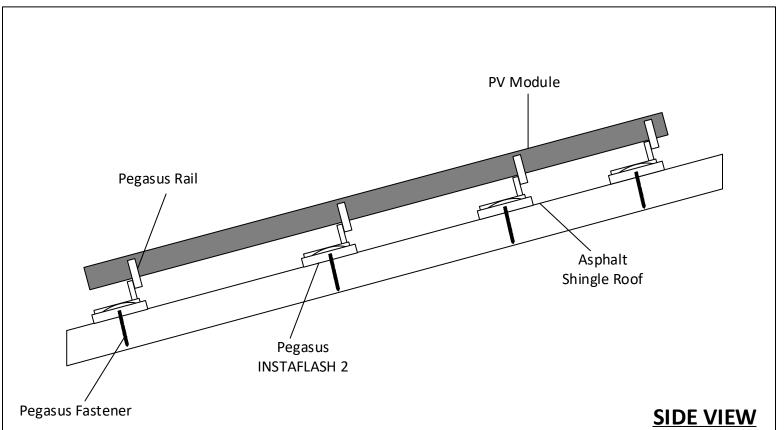
- 12 x PSCA-0MB0: Roof Flashing Conduit Supports
- 12 x BPT 921S: 3/4" 1H EMT PIPE STRAP STEEL

6in setback from sides of the roof









PV Dead Load		
Roof A	PV System Dead Load (Panel + Racking weight) / PV System Area (14 panels x 50.7lbs./panel + 166 ft. of racking x 1.17 lb.ft) / (14 panels x 5.9' x 3.71') = 2.90 psf	
Roof B	PV System Dead Load (Panel + Racking weight) / PV System Area (11 panels x 50.7lbs./panel + 83 ft. of racking x 1.17 lb.ft) / (11 panels x 5.9' x 3.71') = 2.67 psf	



# **Customer Information:**

# Virginia Blanton

17 Lakeview Dr Fuquay-Varina, NC 27526

# **Customer Signature:**

# **Sheet Name:**

**Attachment Details** 

# **JOB NUMBER:**

PV Installation Professional

Ali Buttar
PVIP #031310-32

25-275-PB

Date:	Revision:
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ANSI C 17" X 22"	PV8
NABCEP	